UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,067	08/05/2005	Felix Blank	510.1117	7491

23280 7590 08/30/2010

Davidson, Davidson & Kappel, LLC
485 7th Avenue
14th Floor
New York, NY 10018

EXAMINER	
RADEMAKER, CLAIRE L	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
08/30/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,067	BLANK ET AL.	
	Examiner	Art Unit	
	CLAIRE L. RADEMAKER	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17,18,20-25 and 38-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17,18,20-25 and 38-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 23, 2010 has been entered. Claims 17-18, 20-25, and 38-40 are pending and are rejected for reasons of record. Claim 17 has been amended. Claims 38-40 are new. Claims 1-16, 19, and 26-37 are cancelled.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the Office Action issued on June 24, 2009 which is referred to in the prior office Action issued on December 24, 2009.

Claim Objections

3. Claims 17 and 39 are objected to because of the following informalities:

The amendments to claim 17 as submitted on March 23, 2010 were marked incorrectly. Specifically, the addition of the limitation "an inlet port coupled to the source... that passes into the second field" (claim 17, lines 12-16) is all new, but only a portion thereof (lines 15-16) was marked as new (via underlining).

Claim 39 recites the limitation "the guide inlet port" (claim 39, line 3) which should read "the inlet port" for consistency purposes.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. Claims 17-18, 20, 24, & 38-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Mizuno et al. (US 2002/0012827).

With regard to claims 17-18, 20 & 24, 38, and 40, Mizuno et al. discloses a fuel cell (paragraph [0042]; Figures 1 & 3) comprising:

A membrane electrode assembly (MEA) (31, 32, & 3, paragraphs [0043] & [0046]; Figure 1);

A source of fresh operating substances (60 / 63, paragraph [0047]; Figures 1-2);

A bipolar plate / separator (30, paragraphs [0042] & [0055]; Figures 1 & 4B) having an anode-side gas distributor structure for distributing anode reactants (paragraphs [0046]-[0047]; Figures 1 & 4B), a cathode-side gas distributor structure or distributing cathode reactants (paragraphs [0046]-[0047]; Figures 1 & 4B), a guide passage structure (paragraph [0054]) for distributing a cooling medium (paragraph [0054]), wherein the anode-side gas distributor structure and the cathode-side gas distributor are each divided into at least a first field (90 / 92, paragraphs [0045]-[0046] & [0055]; Figure 1) and a second field (91 / 93, paragraphs [0045]-[0046] & [0055]; Figure 1), where the first field has an entry port (40 / 50, paragraphs [045] & [0047]; Figure 1)

and an exit port (41 / 51, paragraphs [0045] & [0047]; Figure 1) and the second field has an entry port (41 / 51, paragraphs [0045] & [0047]; Figure 1) and an exit port (42 / 52, paragraphs [0045] & [0047]; Figure 1) for the reactants, and wherein the exit port of the first field is connected to an entry port of the second field (paragraphs [0045] & [0047]; Figure 1), and an inlet port coupled to the source of fresh operating substances (60 & 40 / 50 & 63, paragraph [0047]; Figures 1-2) where the exit port of the first field and the entry port of the second field are coupled together (41 / 51, paragraphs [0045]-[0047]; Figure 1) and where the inlet port is coupled to the exit port of the first field and the entry port of the second field (40 / 50 & 41 / 51) via a recessed portion (90 / 92, paragraphs [0046] & [0055];Figures 1-2) thereby providing fresh operating substances into the cathode-side gas distributor structure / anode-side gas distributor structure (paragraphs [0045]-[0047] & [0055]; Figures 1-2);

A feed line disposed between the exit port of the first field and the entry port of the second field (paragraphs [045] & [0047]; Figure 1) and configured to introduce further reactants (paragraphs [045] & [0047]; Figure 1); and

At least one reactant adjustment device / serpentine grooves configured to adjust a flow rate of the reactants for the first and second fields separately (paragraph [0045]; Figure 1).

Mizuno et al. fails to specifically state that the serpentine grooves through which the reactants flow will adjust the flow rate of the reactants.

While Mizuno et al. fails to specifically state that the serpentine grooves through which the reactants flow will adjust the flow rate of the reactants, one of ordinary skill in

the art would understand that the flow rate of the reactants flowing through the serpentine grooves would inherently be adjusted by having to flow in a serpentine path.

The Examiner notes that claims 17, 38, and 40 contain functional limitations. It has been held that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function (*In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); MPEP 2114). Furthermore, it has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim (*Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987); MPEP 2114).

Additionally, the Examiner notes that Mizuno et al. teaches that the reactants are depleted in the first field between the entry port and the exit port (paragraphs [0057]-[0059]; Figures 1-2 & 5) and that the reactants that are depleted in the first field enter the inlet port and are mixed with the fresh operating substances in the inlet port, thereby forming a mixture, and then said mixture passes into the second field (paragraphs [0057]-[0059]; Figures 1-2 & 5).

With regard to claim 39, Mitzuno et al. discloses that the anode-side gas distributor structure (paragraphs [0046]-[0047]; Figures 1 & 4B) and the cathode-side gas distributor structure (paragraphs [0046]-[0047]; Figures 1 & 4B) each include an active cell surface (areas corresponding to anode 32 and cathode 33, paragraphs

[0057]-[0058] & [0060]; Figure 1) and the guide inlet ports (40 / 50 and 41 / 51, paragraphs [045] & [0047]; Figure 1) are located outside of the active cell surfaces (paragraphs [0058] and [0060]; Figure 1).

5. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 2002/0012827), as applied to claim 17 above, and further in view of Iwase et al. (US 6,245,453).

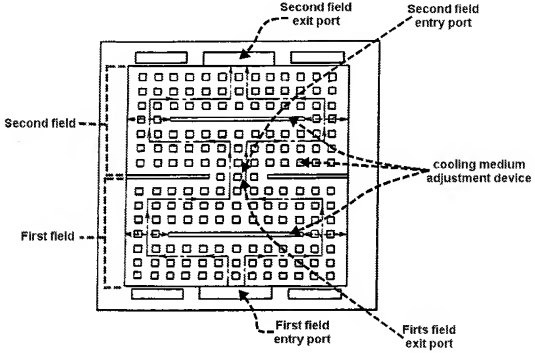
The disclosure of Mizuno et al. as discussed above is fully incorporated herein.

With regard to claims 21-23, Mizuno et al. fails to teach the concept of the first and second fields each including a cooling medium entry port and a cooling medium exit port for the cooling medium, where the cooling medium exit port of the first field is connected to the cooling medium entry port of the second field, or teach a cooling medium adjustment device configured to adjust one of a flow rate and a condition of the cooling medium separately for the first and second fields.

Iwase et al. teaches the concept of a fuel cell (col. 7, lines 1-6) comprising a membrane electrode assembly (MEA) (51 & 52 & 53, col. 7, lines 7-9), a guide passage structure for distributing a cooling medium (col. 16, lines 28-43; Figure 16), and a flowfield plate having first and second fields (col. 16, lines 28-43; Figure 16), where the first and second fields each include a cooling medium entry port and a cooling medium exit port (col. 16, lines 28-43; Figure 16) for the cooling medium, where the cooling medium exit port of the first field is connected to the cooling medium entry port of the second field (col. 16, lines 28-43; Figure 16), and teaches the use of cooling medium

adjustment device (613 and/or 655 & 656, col. 16, lines 28-43; Figure 16) configured to adjust a flow rate of the cooling medium separately for the first and second fields (col. 16, lines 28-43; Figure 16).

The following illustration (modified Figure 16 of Iwase et al.) is provided for clarification:



It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the flowfield plate cooling medium flowfield structure of Mizuno et al. with the flowfield plate cooling medium flowfield structure of Iwase et al. in order to improve the performance of the fuel cell due to improved diffusibility and flow rate (col. 16, lines 28-43 & col. 15, lines 51-54).

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno et al. (US 2002/0012827), as applied to claim 17 above, and further in view of Kearl (US 2003/0022052).

The disclosure of Mizuno et al. as discussed above is fully incorporated herein.

With regard to claim 25, Mizuno et al. fails to teach a temperature sensor.

Kearl teaches the concept of a fuel cell bipolar plate (10, paragraphs [0027] & [0066]) comprising a temperature sensor (17, paragraphs [0059]-[0063]) in order to improve the reliability and efficiency of the fuel cell and allow the fuel cell to operate under stable conditions (paragraphs [0059] & [0010]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of a fuel cell bipolar plate comprising a temperature sensor of Kearl to the bipolar plate(s) of Mizuno et al. in order to improve the reliability and efficiency of the fuel cell and allow the fuel cell to operate under stable conditions (paragraphs [0059] & [0010]).

Response to Arguments

Claim Rejections - 35 USC §102 & §103

7. Applicant's arguments with respect to claims 17-18, 20-25, and 38-40, filed on March 3, 2010, have been considered but are not persuasive.

On pages 5-6 of the Applicant's Response, Applicants argue that "Mizuno et al. does not disclose the 'inlet port' now recited in claim 17'" (Applicant's Response, page 6).

The Examiner respectfully disagrees with the Applicants argument that "Mizuno et al. does not disclose the 'inlet port' now recited in claim 17'" (Applicant's Response, page 6) because Mizuno et al. clearly discloses a source of fresh operating substances (60 / 63, paragraph [0047]; Figures 1-2) and an inlet port coupled to the source of fresh operating substances (60 & 40 / 50 & 63, paragraph [0047]; Figures 1-2) where the exit port of the first field and the entry port of the second field are coupled together (41 / 51, paragraphs [0045]-[0047]; Figure 1) and where the inlet port is coupled to the exit port of the first field and the entry port of the second field (40 / 50 & 41 / 51) via a recessed portion (90 / 92, paragraphs [0046] & [0055];Figures 1-2) thereby providing fresh operating substances into the cathode-side gas distributor structure / anode-side gas distributor structure (paragraphs [0045]-[0047] & [0055]; Figures 1-2).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE L. RADEMAKER whose telephone number is (571)272-9809. The examiner can normally be reached on Monday - Thursday, 8:00AM - 4:00PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. L. R./
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795